

Aircraft Sound Monitoring Study: Project Kick-off Meeting

(b) (6)

OPNAV N453
Project Lead



SOUND MONITORING
May 6, 2020



Kick-off Meeting Agenda

- Welcome and Opening Remarks – OPNAV N453
- Project Team Introduction
- Project Overview
- Key Tasks & Technical Approach
- Suggested Monitoring Locations
- Project Milestones
- Data Needs and Next Steps
- Wrap up & Questions



Team Members & Roles

- Navy
 - (b) (6) (Coordinate at Secretariat level)
 - (b) (6) (Project Lead)
 - (b) (6) (NAVFAC COR/PM)
 - (b) (6) (NRNW)
 - (b) (6) (NRSW)
 - (b) (6) (NASWI)
 - (b) (6) (NASL)
- Contractors
 - (b) (6) (Leidos Project Manager)
 - (b) (6) (BRRC Lead)



Project Overview

- NDAA Language
- Objectives: Assess Sound Modeling Methods and Procedures
- Monitoring Approach
- Data Requirements
- Data Analyses
- Reporting



NDAA Language

Sec. 325. Real-Time Sound-Monitoring at Navy Installations where Tactical Fighter Aircraft Operate

(a) MONITORING—The Secretary of the Navy shall conduct real-time sound-monitoring at no fewer than two Navy installations and their associated outlying landing fields on the west coast of the United States where Navy combat coded F/A–18, E/A–18G, or F–35 aircraft are based and operate and noise contours have been developed through noise modeling. Sound monitoring under such study shall be conducted—

- (1) during times of high, medium, and low activity over the course of a 12-month period; and
- (2) along and in the vicinity of flight paths used to approach and depart the selected installations and their outlying landing fields.

(b) PLAN FOR ADDITIONAL MONITORING—Not later than 90 days after the date of the enactment of this Act, the Secretary of the Navy shall submit to the congressional defense committees a plan for real-time sound monitoring described in subsection (a) in the vicinity of training areas predominantly overflown by tactical fighter aircraft from the selected installations and outlying landing fields, including training areas that consist of real property administered by the Federal Government (including Department of Defense, Department of Interior, and Department of Agriculture), State and Local governments, and privately owned land with the permission of the owner.



NDAA Language

Sec. 325. Real-Time Sound-Monitoring at Navy Installations where Tactical Fighter Aircraft Operate (*Continued*)

(c) REPORT REQUIRED—Not later than December 1, 2020, the Secretary of the Navy shall submit to the congressional defense committees a report on the monitoring required under subsection (a).

Such report shall include—

- (1) the results of such monitoring;
- (2) a comparison of such monitoring and the noise contours previously developed with the analysis and modeling methods previously used;
- (3) an overview of any changes to the analysis and modeling process that have been made or are being considered as a result of the findings of such monitoring; and
- (4) any other matters that the Secretary determines appropriate.

(d) PUBLIC AVAILABILITY OF MONITORING RESULTS—The Secretary shall make the results of the monitoring required under subsection (a) publicly available on a website of the Department of Defense.



Objectives

- Sound Monitoring: Tactical Jet Operations
 - NAS Whidbey Island
 - Ault Airfield
 - OLF Coupeville
 - Olympic MOAs
 - NAS Lemoore
- Sufficient Data to Validate Modeling
- Compare with Previous Modeled Results
- Report Findings
- Results Publicly Available





Monitoring Approach: Airfields

- Following Guidance Outlined in American National Standards Institute (ANSI) S12.9 Part 2: *"Quantities and Procedures for Description and Measurement of Environmental Sound. Part 2: Measurement of Long-term, Wide Area Sound"*
- *Regular Operational Tempos*
 - Temporal sampling
 - Four (4) seven-day (continuous) sampling periods
 - One sampling period for each season at each location
 - One optional sampling period (5th), if required
 - Stratified spatial sampling
 - 10 to 12 sites per location
 - Utilize existing models for site selection



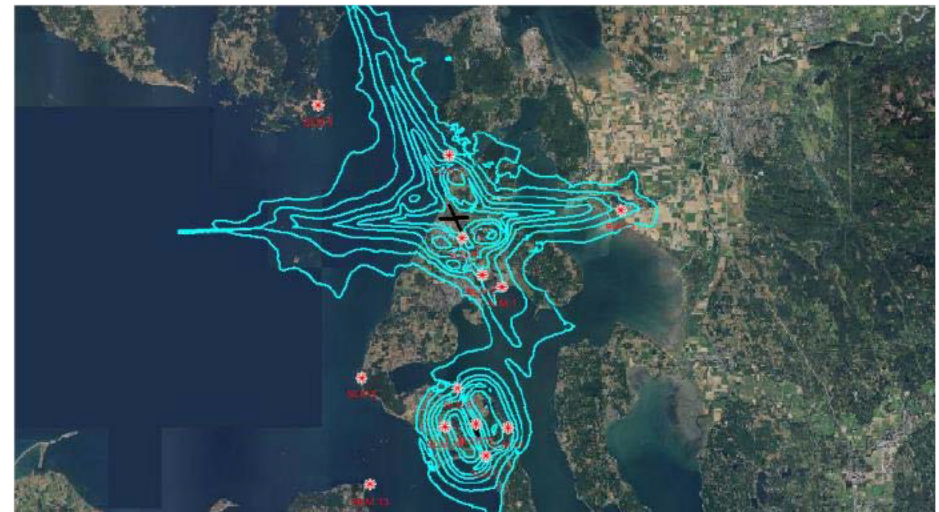
Monitoring Approach: Airspace

- Under Olympic MOAs in Olympic National Park
- Following Guidance Outlined in ANSI S12.9 Part 2
- *Sporadic Operational Tempo*
 - Temporal sampling
 - 365-day (continuous) sampling period
 - Coordinated observer periods
 - One location
- Reference: ANSI S12.100 "*Methods to Define and Measure the Residual Sound in Protected Natural and Quiet Residential Areas*" will be used, where feasible



Data Requirements: Acoustical

- Sound Monitoring Locations Selection Parameters
 - Range of flight operation types
 - Near projected 65 dBA DNL contours
 - Underneath primary flight tracks (primary)
 - Away from primary flight tracks (secondary)
 - Other locations at different projected DNL levels, > 60 dBA preferred
 - Minimize background noise
 - Away from reflecting surfaces
 - Open (unwooded) areas
 - Away from traffic
 - Physical security considered





Data Requirements: Operational

- Planned Monitoring Periods
 - Normal and increased operational tempos
 - Weekends will provide low operational tempos
 - *Ensure OLF Coupeville is active each period*
- Flight Data for Each Operation
 - Aircraft type
 - Operation type (departure, arrival, and patterns)
 - Runway
 - Flight track (modeled)
 - Variations



Data Requirements: Operational

SOUND MONITORING

- Static Data for Each Operation
 - Aircraft type
 - Location and heading
 - Run-up engine powers and durations
 - Variations
- Supporting: Weather



Data Collection Approach: Site Visits & Logistics Coordination

- Pretest Meeting at Each Base
- Meetings with Federal Partners and Local Elected Officials
- Confirmation of Selected Sites (10 to 12)
 - Access requirements
 - Permission obtained
 - Secure from interference
 - Transportation requirements
 - Power for semi-permanent locations



Data Collection Approach: Logistics Coordination

- Operational Data Collection Confirmed
 - Review/confirm previously modeled flight profiles and flight tracks
 - Modify modeled flight profiles and flight tracks, if required
- Confirm Ops Data Collection Procedures
- ATC Support Methods For Collecting Flight Ops
- Determine Procedures For Obtaining Ground Run-up Ops
- Determine Source Of Local Weather Data





Data Collection Approach: Operational

- Need an Advance Daily Schedule
- Operational Data Collection: Airfields
 - Is tracking data available?
 - Measurement team will provide tablets and personnel to collect operations data within the control tower
 - Obtain ground run-up operations
 - Obtain weather data from base weather station
- Operational Data Collection: Airspace
 - Obtain DCAST Scheduled and Actual Use Data for Olympic MOAs
 - Aircraft type, # of aircraft, entry time, exit time
 - Type of training missions, if possible



Data Collection Approach: Acoustical

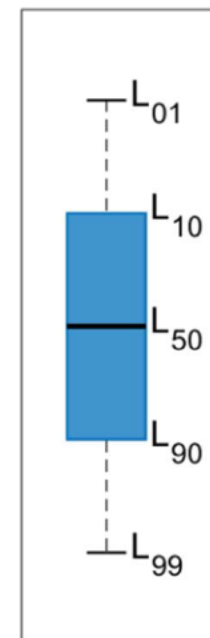
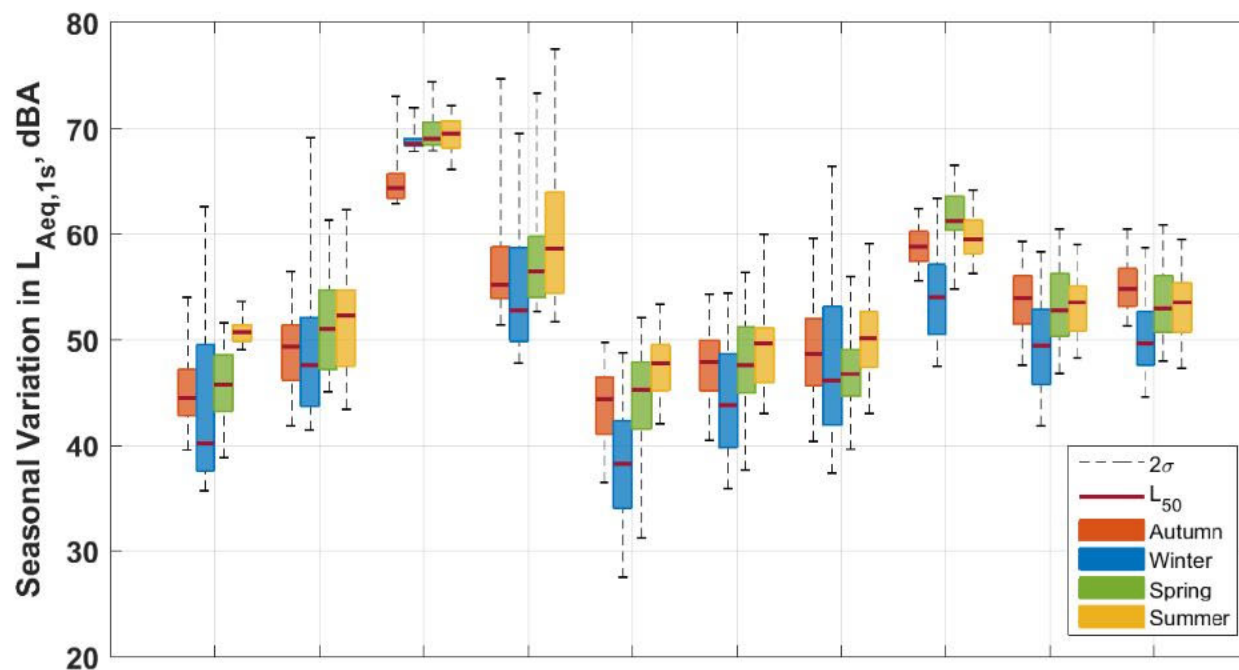
- Acoustical Data Collection
 - Two to three field observers performing scheduled observations at (or near) the monitoring sites
 - 10 to 12 hours of observations per day
 - Scheduled observation locations will be based on expected runway use and operational tempo for each day
- Class 1 Sound Level Meters
 - 1-s sampling of $\frac{1}{3}$ octave band spectra
 - Event exceedance audio files (at selected locations)
 - Scheduled direct observations





Data Analysis: Monitored Data

- Data Quality Checks (Acoustical and Operational)
- Calculate Aircraft Acoustical Metrics at Each Site: L_{Amax} , SEL, DNL, Number Of Events Above, and Event Durations
- Assess Variations





Airfield Data Analysis: As Flown

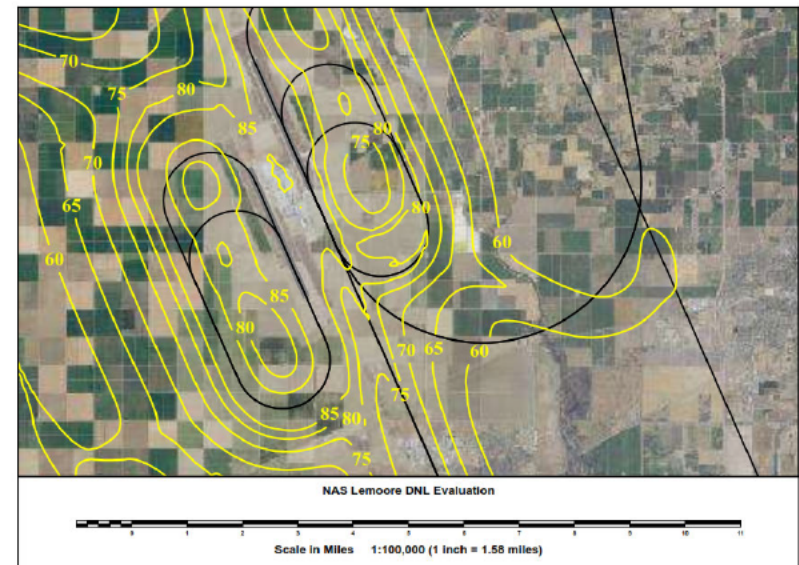
- Develop “As Flown” Operational Scenarios
 - Daily
 - Each monitored period
 - Total time
- Assess Agreements/Variations Among Monitored and Modeled Sound Data
 - Focusing on acoustical basis of modeling
 - Analysis will include NoiseCheck II





Airfield Data Analysis: Model Comparison

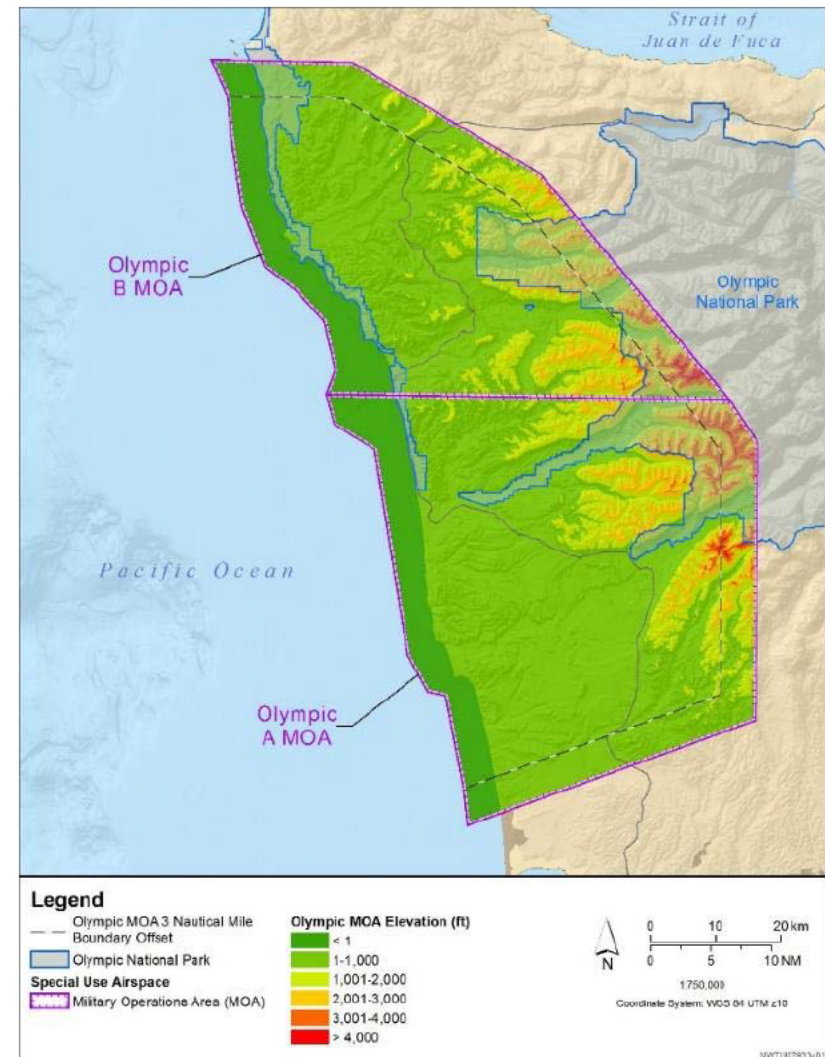
- Assess Agreements/Variations Among Monitored and Previously Modeled Data
 - Analysis will include NoiseCheck II
 - Updated flight profiles, if required
 - Updated flight tracks, if required
 - Document differences
- Primarily Evaluating Operational Modeling





Airspace Data Analysis

- Separate MOA Active/Inactive Times
- Develop “As Flown” Operational Scenarios
 - Monthly basis
 - Total time
- Assess Agreements/Variations Among Monitored and Previously Modeled Data
 - Acoustical basis
 - Operational basis





Reporting

- Document Data Collection Procedures
- Document Measured Acoustical and Operational Data
 - Average values
 - Variability
- Describe the Sound Modeling Results
 - “As flown” modeling
 - Previous modeling cases
- Compare Modeled Results with Monitored Data
 - Discuss potential reasons for differences
 - Acoustical basis
 - Operational basis



Suggested Monitoring Locations: Ault Field

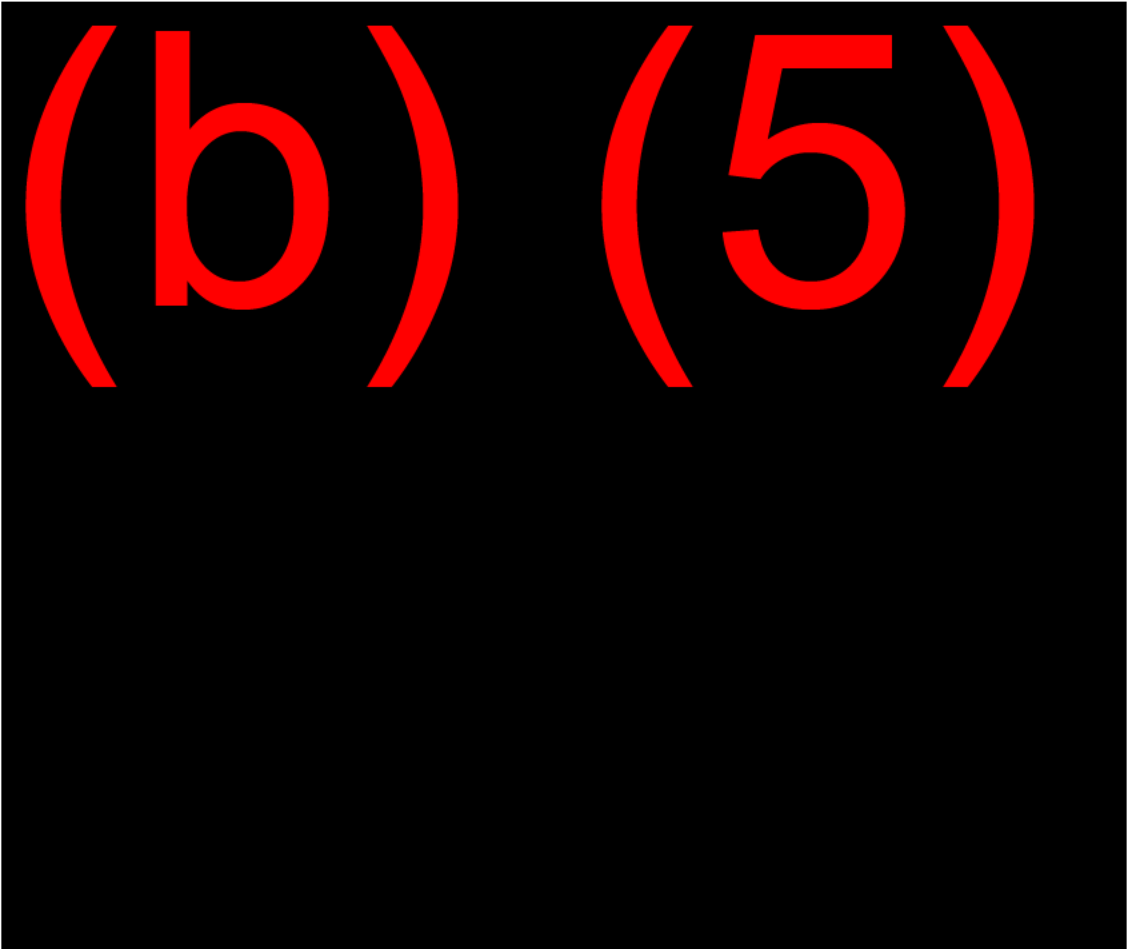
- Projected DNL Contours
 - In Red
 - Levels 55 to 85 dBA DNL (10 dBA steps)
- Primary Flight Tracks
 - In Black
- Suggested Locations
 - Preliminary
 - Will Be Adjusted
 - Local Input
 - Spatial Stratification

(b) (5)



Suggested Monitoring Locations: OLF Coupeville

- Projected DNL Contours
 - In Red
 - Levels 55 to 85 dBA DNL (10 dBA steps)
- Primary Flight Tracks
 - In Black
- Suggested Locations
 - Preliminary
 - Will Be Adjusted
 - Local Input
 - Spatial Stratification





Spatial Stratification: NASWI

(b) (5)



Spatial Stratification: NASL Suggested Sites

SOUND MONITORING

- Projected DNL Contours
 - In Red
 - Levels 55 to 85 dBA DN (10 dBA steps)
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 - Will Be Adjusted
 - Public Input
 - Spatial Stratification

(b) (5)



Spatial Stratification: NASL Suggested Sites

SOUND MONITORING

(b) (5)



Project Milestones

Milestone	Time Frame
Initial Data Collection / Coordination	May/June 2020
Detailed Monitoring Plan	June 2020
Installation Pre-Data Collection/Logistics Site Visits	Mid-Summer 2020
Site Visit #1	Late Summer 2020
Site Visit #2	Fall 2020
Site Visit #3	Winter 2021
Site Visit #4	Spring 2021
Draft Technical Report	Summer 2021
Pre-Final Technical Report	
Final Technical Report	



Next Steps

- Virtual Operational Data Modeling with Aircrews and ATC
- Development of Operational Data Collection Procedures with ATC
- Sound Level Meter Locations: Identification and Classification
- Site Visits
 - TBD
 - DoD Travel Ban to 30 June 2020



Questions



Backups



Data Collection Approach: Conceptual Schedule

- Friday: Team travel to Base A
- Saturday: Deploy equipment at Base A
- Sunday to Saturday: Acoustical and operational data collection
- Sunday: Demobilization and ship equipment to Base B
- Monday: Team travel home
- Tuesday to Thursday: Initial data review and quality checks
- Friday: Team travel to Base B
- Saturday: Deploy equipment at Base B
- Sunday to Saturday: Acoustical and operational data collection
- Sunday: Demobilization and ship equipment home
- Monday: Team travel home
- Tuesday to Thursday: Initial data review and quality checks



Conceptual Monitoring Locations: NAS Lemoore

- Projected DNL Contours
 - In Red
 - Levels 55 to 85 dBA DNL (10 dBA steps)
- Primary Flight Tracks
 - In Black
- Initial Locations
 - Preliminary
 - Will Be Adjusted
 - Public Input
 - Spatial Stratification

